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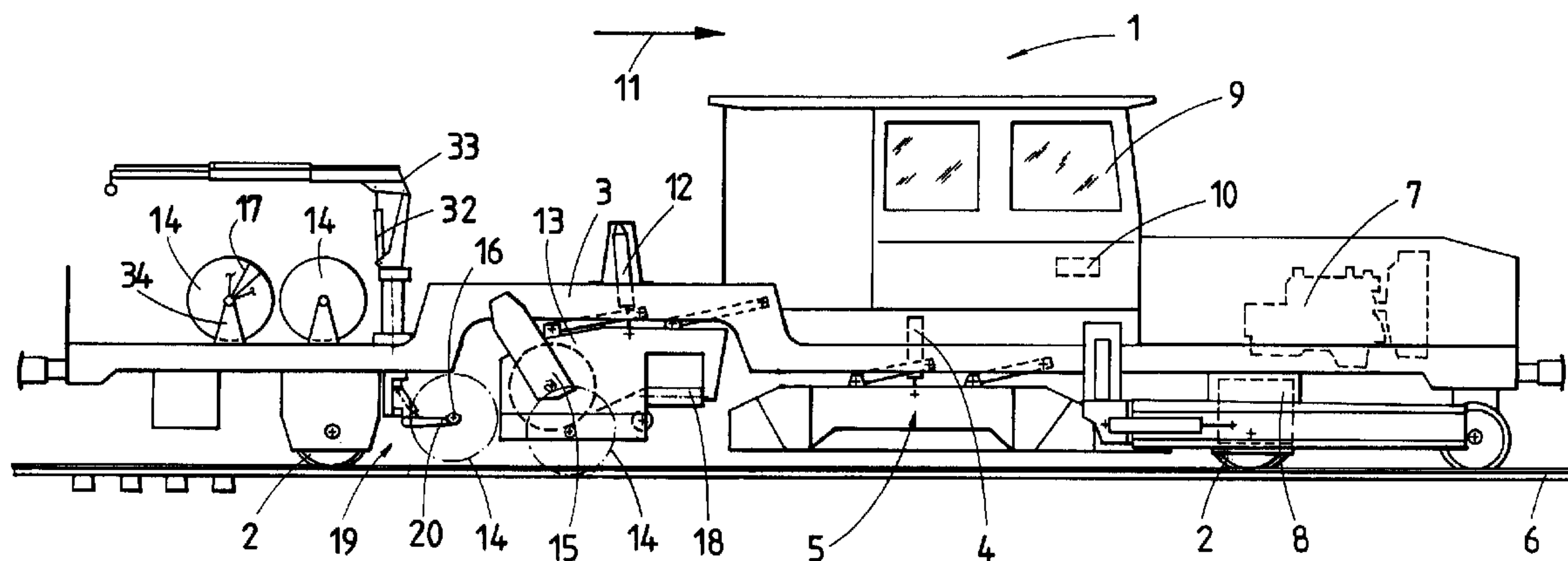
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(54) Title: MACHINE FOR IMPLEMENTING TRACK MAINTENANCE OPERATIONS



(57) Abrégé/Abstract:

A machine for implementing track maintenance operations is equipped with a machine frame (3) supported on on-track undercarriages (2), a rotatable sweeping brush (14) mounted in a sweeping brush housing (13) as well as a supporting device (19) for intermediate storage of the sweeping brush (14). In order to simplify the exchange of a sweeping brush, the supporting device (19) is mounted for transverse displacement in a transverse guide extending perpendicularly to the longitudinal direction of the machine and horizontally and is connected to a transverse displacement drive.



## ABSTRACT

A machine for implementing track maintenance operations is equipped with a machine frame (3) supported on on-track undercarriages (2), a rotatable sweeping brush (14) mounted in a sweeping brush housing (13) as well as a supporting device (19) for intermediate storage of the sweeping brush (14). In order to simplify the exchange of a sweeping brush, the supporting device (19) is mounted for transverse displacement in a transverse guide extending perpendicularly to the longitudinal direction of the machine and horizontally and is connected to a transverse displacement drive.

## A MACHINE FOR IMPLEMENTING TRACK MAINTENANCE OPERATIONS

The invention relates to a machine for implementing track maintenance operations, including a machine frame supported on on-track undercarriages and a sweeping brush mounted in a sweeping brush housing for rotation about a brush shaft extending transversely of the longitudinal direction of the machine and horizontally, the sweeping brush being vertically adjustable by means of drives.

A machine of this kind in the form of a ballast plough for ballasting a track is already known from US 5 402 547. A total of three sweeping brush housings distanced from one another, each having a rotatable sweeping brush, are arranged following a ballast plough which is vertically adjustable by means of drives and positioned underneath the machine frame. Located at the front end of the machine frame is a further sweeping brush to be exchanged for a sweeping brush worn out from operative use in the sweeping brush housing. The manipulative expense required in this process is relatively high because the sweeping brush, comprising a large number of elastic tubes, is correspondingly heavy. In case the occupied track is positioned between two neighboring tracks which are being used without restrictions, there are also serious safety problems which arise in connection with the exchange of the sweeping brush.

From US 5 172 637 and US 5 172 635 it is also already known to employ a sweeping brush in connection with a tamping machine or a track stabilizer.

The object of the present invention is now to create a machine of the type described in the introduction with which a simplified exchange of the sweeping brush can be carried out.

This object is achieved according to the invention with a machine described in the beginning which is characterized by a

supporting device for intermediate storage of the sweeping brush, the supporting device being connected to the machine frame and comprising two bearing brackets, distanced from one another in the transverse direction of the machine, for supporting the brush shaft, the supporting device being mounted for transverse displacement in a transverse guide, extending perpendicularly to the longitudinal direction of the machine and horizontally, and being connected to a transverse displacement drive.

This design permits an advantageous intermediate storage of a new sweeping brush in the immediate vicinity of the sweeping brush housing in order to be able to carry out a quick and simple exchange when required by merely depositing the sweeping brush on the track, avoiding any physical involvement of the operating personnel. Owing to the transversely displaceable design of the supporting device, the transfer of the new sweeping brush, conveniently pre-stocked on the machine frame, to the supporting device can be carried out in greatly simplified manner, for example by means of a lifting apparatus. Of course, this conversely also applies to the transporting away of the spent sweeping brush which is not useable anymore.

According to an advantageous further development of the invention, the transverse guide fastened to the machine frame is formed by two guide rails joined together by a hinge having a vertical axis, whereby only a first guide rail is connected to the machine frame and the second guide rail is pivotable from an operative position extending perpendicularly to the longitudinal direction of the machine into an inoperative position extending in the longitudinal direction of the machine. This, on the one hand, provides for the possibility of distancing the sweeping brush as far as possible from the machine frame in the transverse direction of the machine for problem-free transfer by means of a lifting apparatus. On the



other hand, the pivotable design of the second guide rail ensures that the prescribed clearance gauge is not violated during the operation of the machine.

Additional advantageous developments of the invention become apparent from the further sub-claims.

The invention is explained in more detail below with the aid of an embodiment represented in the drawing in which

Fig. 1 shows a side view of a machine comprising a ballast plough for ballasting a track and having a supporting device for storing a sweeping brush,

Fig. 2 shows an enlarged side view of the supporting device,

Fig. 3 shows a view of the supporting device in the longitudinal direction of the machine, the supporting device being shown displaced into an extreme transverse position for exchanging a sweeping brush (the sweeping brush is not shown for better clarity), and

Fig. 4 shows a plan view in detail of a transverse guide of the supporting device, projecting beyond the machine frame with regard to the transverse direction of the machine.

A machine 1, evident in Fig. 1, for implementing track maintenance operations has a machine frame 3 supported on on-track undercarriages 2 and a ballast plough 5, vertically adjustable by means of drives 4, for ballasting a track 6. An engine 7 serves to supply power to a motive drive 8 and to all further drives. Located in a driver's cab 9 is a central control device 10. An arrow 11 shows a preferred working direction of the machine 1.

Located between the ballast plough 5 and the rear on-track undercarriage 2 is a sweeping brush housing 13, vertically adjustable by means of drives 12, in which a sweeping brush 14 is arranged. The latter has a brush shaft 16 rotatable by a drive 15 and extending perpendicularly to the longitudinal direction of the machine and horizontally, the brush shaft 16 being connected to a multitude of radially projecting, flexible sweeping elements 17. Positioned immediately preceding the sweeping brush housing 13 is a transverse conveyor belt 18 for transporting away excess ballast.

A supporting device 19 for intermediate storage of a sweeping brush 14 is provided immediately preceding the rear on-track undercarriage 2. Said supporting device 19 is essentially composed of two bearing brackets 20, distanced from one another in the transverse direction of the machine and extending horizontally and in the longitudinal direction of the machine, and a transverse carriage 21 connected thereto as well as a transverse guide 22 (see Fig. 3). Said transverse guide 22, fastened to the machine frame 3 and extending perpendicularly to the longitudinal direction of the machine and horizontally, is formed by two guide rails 25, 26 joined together by a hinge 23 having a vertical axis 24. Of these, only a first guide rail 25 is connected to the machine frame 3, while the second guide rail 26 is pivotable from an operative position extending perpendicularly to the longitudinal direction of the machine into an inoperative position extending at an angle to the longitudinal direction of the machine - represented in Fig. 4 in dash-dotted lines.

The pivotable second guide rail 26 is lockable by means of a locking device 27 both in the pivoted position and in the inoperative position. The transverse carriage 21 supporting the bearing brackets 20 is transversely displaceable with the aid of a transverse displacement drive 28 articulatedly connected to the machine frame 3.

The bearing brackets 20 are positioned between the transverse guide 22 and the sweeping brush housing 13 and, at their free end distanced from the transverse guide 22, are equipped with a fixing device 29 for mounting the brush shaft 16. Said fixing device 29 is designed in this case in very simple manner merely as a recess for receiving the brush shaft 16. Alternatively, any known quickly releasable fixing device can also be used. As is evident particularly in Fig. 3, each bearing bracket 20 is mounted on the transverse carriage 21 for pivoting about an axis 30 extending perpendicularly to the longitudinal direction of the machine and horizontally and is connected to a pivot drive 31.

A crane 33 (Fig. 1), vertically adjustable by means of drives 32 and rotatable about a vertical axis and mounted on the machine frame 3 above the same, is associated with the supporting device 19 arranged underneath the machine frame 3. Provided in the transporting range of said crane 33 are bearing supports 34, fastened to the machine frame 3, on which are supported sweeping brushes 14 arranged one following the other in the longitudinal direction of the machine.

For transferring a sweeping brush 14, stored for replacement on the bearing supports 34, into the sweeping brush housing 13, the guide rail 26 is pivoted into an operative position extending transversely of the longitudinal direction of the machine (see Fig. 4) and locked in this position by means of the locking device 27. By actuating the transverse displacement drive 28, the transverse carriage 21 is subsequently displaced transversely together with the bearing brackets 20 into a transfer position evident in Fig. 3 in which the transverse carriage 21 is shifted to the end of the second guide rail 26. In this position, a sweeping brush 14 can be deposited onto the two bearing brackets 20 of the supporting device 19 by the crane 33 without problems. Thereafter, with actuation of the transverse displacement drive 28, the

supporting device 19 together with the sweeping brush 14 is returned again into a symmetric position with regard to the machine's center. By actuating the two pivot drives 31 the bearing brackets 20 are lowered (dash-dotted lines in Fig. 2) and thereby the sweeping brush 14 is deposited on the track 6. By backing up the machine 1 slightly, the sweeping brush 14 lying on the track 6 is positioned under the raised sweeping brush housing 13, after which the sweeping brush 14 is appropriately anchored in the support points thereof for operative use.

The exchange of a worn sweeping brush 14 is analogously executed in reverse order. In order to be able to carry out an exchange of the sweeping brush 14 without problems also in case of traffic on the neighboring track, it is useful to provide a pivotable guide rail 26 in the area of both longitudinal sides of the machine. This affords the possibility to exchange the sweeping brush 14, as desired, via the one or the other longitudinal side of the machine. Alternatively, the bearing brackets 20 could, for example, be formed suitably elongated for supporting two sweeping brushes 14 arranged one following the other in the longitudinal direction of the machine.



## Claims:

1. A machine for implementing track maintenance operations, including a machine frame (3) supported on on-track undercarriages (2) and a sweeping brush (14) mounted in a sweeping brush housing (13) for rotation about a brush shaft (16) extending transversely of the longitudinal direction of the machine and horizontally, the sweeping brush (14) being vertically adjustable by means of drives (12), characterized by a supporting device (19) for intermediate storage of the sweeping brush (14), the supporting device (19) being connected to the machine frame (3) and comprising two bearing brackets (20), distanced from one another in the transverse direction of the machine, for supporting the brush shaft (16), the supporting device (19) being mounted for transverse displacement in a transverse guide (22), extending perpendicularly to the longitudinal direction of the machine and horizontally, and being connected to a transverse displacement drive (28).

2. A machine according to claim 1, characterized in that the transverse guide (22) fastened to the machine frame (3) is formed by two guide rails (25,26) joined together by a hinge (23) having a vertical axis (24), whereby only the first guide rail (25) is connected to the machine frame (3) and the second guide rail (26) is pivotable from an operative position extending perpendicularly to the longitudinal direction of the machine into an inoperative position extending in the longitudinal direction of the machine.

3. A machine according to claim 2, characterized in that the pivotable second guide rail (26) is lockable by means of a locking device (27) both in the operative position and in the inoperative position.

4. A machine according to any one of claims 1, 2 or 3, characterized in that the bearing brackets (20) are positioned between the transverse guide (22) and the sweeping brush housing (13) and have, at their free end distanced from the transverse guide (22), a fixing device (29) for mounting the brush shaft (16).

5. A machine according to any one of claims 1 to 4, characterized in that both bearing brackets (20) are connected to one another via a transverse carriage (21) displaceably mounted in the transverse guide (22), and that each bearing bracket (20) is mounted on the transverse carriage (21) for pivoting about an axis (30) extending perpendicularly to the longitudinal direction of the machine and horizontally and is connected to a pivot drive (31).

6. A machine according to any one of claims 1 to 5, characterized in that a crane (33), vertically adjustable by means of drives (32) and rotatable about a vertical axis and mounted on the machine frame (3) above the same, is associated with the supporting device (19) arranged underneath the machine frame (3).

7. A machine according to claim 6, characterized in that bearing supports (34), fastened to the machine frame (3) in the transporting range of the crane (33), are provided for supporting and fixing the sweeping brushes (14) arranged one following the other in the longitudinal direction of the machine.

8. A machine including a ballast plough (5), arranged between the on-track undercarriages (2), for ballasting a track (6) according to any one of claims 1 to 7, characterized in that the supporting device (19) for intermediate storage of the sweeping brush (14) is arranged between the ballast plough (5) and the rear on-track undercarriage (2) with regard to the operating direction.

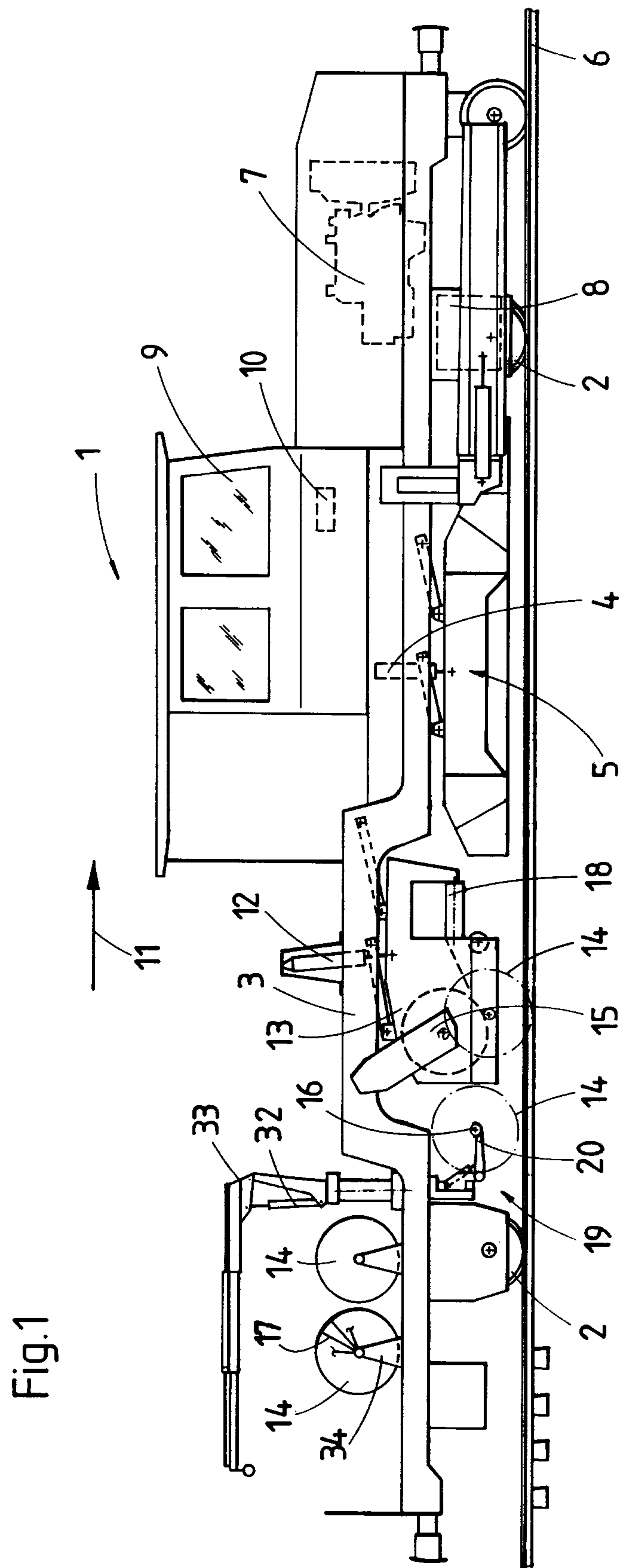


Fig. 1

